

INVESTIGATOR'S ANNUAL REPORT

National Park Service

All or some of the information provided may be available to the public

Reporting Year: 2004	Park: Shenandoah NP																					
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Permit#: SHEN-2004-SCI-0021																						
Park-assigned Study Id. #: SHEN-00306																						
Project Title: Geologic Map and Research of the Shenandoah National Park Region, VA																						
Permit Start Date: Oct 01, 2004	Permit Expiration Date Sep 30, 2007																					
Study Start Date: Oct 01, 2004	Study End Date Sep 30, 2007																					
Study Status: Continuing																						
Activity Type: Research																						
Subject/Discipline: Geology / General																						
Objectives: <p>The Shenandoah National Park region is experiencing growth from the National Capital Region and geologic data are required for effective land and water management, both within the park and the adjacent communities. The 1:62,500-scale bedrock geologic map and report by Tom Gathright, VDMR, is out of print and needs revision. As part of the USGS-NPS Memorandum of Understanding, we are producing a new bedrock and surficial geologic map of the greater</p> <p>park region using a combined FEDMAP, EDMAP, and STATEMAP research Team. Interdisciplinary research by USGS, NPS, and external scientists will utilize the new geologic database. A new interest in vegetation communities and ecology by NPS and other biological institutions will benefit greatly from data that helps define the current framework and past</p> <p>conditions. Counties adjacent to the park are interested in geologic data applied to groundwater assessment. Specifically, Warren and Clarke Counties on the west side of the Blue Ridge are part of the Northern Shenandoah Valley Project that require data on the highlands of the basin. Fauquier County on the east side has requested additional geologic data as well.</p> <p>The map area builds upon the recent work of the adjacent DC regional database (http://pubs.usgs.gov/of/of01-227/). We have an extensive collection of</p>																						

U-Pb and fission track data and are expanding our argon data to provide more than 3 transects to determine the structural and thermal history of this part of the central Appalachians. The Cenozoic history of the region is not well understood. We have an on-going investigation of surficial deposits

in the Paine Run watershed. The western flank of the Blue Ridge that is underlain by the siliclastic rocks of the Chilhowee Group. Streams draining these slopes have an unusually low pH due to the lack of buffering capacity in the soils. Slope processes, both currently active, and relict from severe climate conditions in the Pleistocene, are not well understood. Watersheds in the area contain numerous examples of tors, block fields and block slopes, block streams.

Stream valleys are filled with minor alluvial and debris-flow deposits. To the west along the footslopes of the Blue Ridge, large interlocking fans composed of debris-flow and alluvial deposits form a nearly continuous bajada. Segments of the fans overlie a karst terrane and the deposits are very thick. These dynamic processes will be studied by detailed mapping of surficial and bedrock geology within a single watershed, from its headwaters along the Blue Ridge summit

down to the Shenandoah River. Erosion and sediment transport in the Appalachian Blue Ridge is dominated by sporadic events of debris flows and stream flooding. In the past, however, the distribution of sediment was strongly controlled by mass wasting associated with ground ice. The radical shift in geomorphic response between these two end members demands a lag effect

transitional with climate change and a disequilibrium geomorphic response that reflects the preceding conditions. Analysis of surficial deposits reflecting the last 45,000 years provides a record of these transitions that will allow models for geomorphic response to be constructed.

Findings and Status:

No activity was conducted this report year as the permit has not been provided yet

For this study, were one or more specimens collected and removed from the park but not destroyed during analyses?

No

Funding provided this reporting year by NPS:

0

Funding provided this reporting year by other sources:

700000

Fill out the following ONLY IF the National Park Service supported this project in this reporting year by providing money to a university or college

Full name of college or university:

n/a

Annual funding provided by NPS to university or college this reporting year:

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